OFFER MATCHING SYSTEM

In matching systems such as the system described in EP-A-0399850, various clients are connected to a central computer system and various offers to buy or sell from clients are matched by the central system. Since the transmission channels between clients and the central system are not completely error free, deals are only completed when an offer to sell has been made by one client, a matching offer to buy has been made by another client, details have been sent to each client of the other party to the deal and confirmation has been received at the central system from each client that the details of the other party and the deal have been received.

There is a problem in this system when one communication channel fails since although confirmation is sent to one client and acknowledged, the other party does not receive details of the deal and/or his acknowledgement does not reach the central system. If the communication channel which fails is that of the purchaser and failure occurs after he has made his offer but before he receives an acknowledgement, the seller will have offered to sell, will have received details of the buyer from the central system and will have acknowledged to the central system that all details of the deal have been recorded, so that as far as the seller is concerned, the deal is complete. The buyer will have received details of the offer from the central system and have made his offer to buy but due to the channel failure he will not have received any details of the offerer or confirmation that the deal is complete. He will be uncertain of his position and may assume that his offer to buy has not been accepted and consider the deal cancelled. This will leave the central system and the buyer at odds, and if the terms of the contract are appropriate, it may be that the central system has to purchase the items from the seller and attempt to sell them in the market itself, possibly at a loss, if the buyer has considered the deal cancelled.

The system described above has various checking devices including a time delay device in the central system to interrogate each client if the client does not confirm receipt of information which has been sent to it within a certain period. In response to the time lapse signal at the central system, further interrogations of the client may be made but if no acknowledgement is received, then alarms may be made to alert an operator that enquiries outside the matching system have to made to sort out the confusion. If the communication channel to the client only failed after he had received details of the transaction but before his acknowledgement was sent out, then the presence in his memory store of the deal details should be sufficient to complete the deal but if the communication channel failed before he received details of the bargain, then the central system may be at risk in having to find an alternative buyer.

The present invention attempts to overcome this problem by removing the time lapse generator from the central system and providing one in each client station. If a client is making an offer to sell, his offer to sell is transmitted to the central station as before and when a deal is matched, details of the buyer and the amount offered for purchase are sent back to the selling client who acknowledges in the normal way. The time lapse is generated from the time the deal details are received from the host computer or the acknowledgment is sent back to the central system and will in due course generate an alarm if within a predetermined time lapse period an acknowledgment is not received back from the other party to the deal through the central system that the acknowledgement has been received. Thus not only is the time lapse generator moved from the central system to the client's station, but also the client's data processing system requires means not only to acknowledge receipt of details of the deal but also means responsive to the acknowledgement from the other party to the deal of receipt of the deal details, which latter means stops operation of the time lapse generator. If the time lapse generator is not stopped within a predetermined time, the alarm is generated and the deal is

denoted as suspect, requiring further checking with the other party before it can be considered binding. The system according to the invention thus provides means to alert the operator to make further checks so that any failures in the communication channels will not lead to misunderstandings.

An example of the invention will now be described with reference to the accompanying message diagram. Client A makes an offer to sell one million items at a given price and this offer is transmitted as message 1 to the central system known as the host computer. This offer is broadcast as message 2 to other clients including client B by the host computer. If client B makes an offer as message 3 to buy one hundred thousand items at that price, the host computer sends a message 4 to client A that he has sold one hundred thousand items to client B at the offered price. Client A records this deal in a non-volatile memory and sends an acknowledgement 5 to the host computer of his receipt. Similarly, the host computer sends to client B a message 6 that he has bought one hundred thousand items from client A at the offered price and this message is also stored in the non-volatile memory of client B and an acknowledgement 7 sent back to the host computer. These acknowledgements are recorded in the host computer and transmitted as messages 8 and 9 respectively to the opposite parties so that, provided the communication channels remain open, each client has made an offer, has received details of the deal and acknowledged it and in due time received acknowledgement that the other party has acknowledged receipt of the deal. The deal details stored on the non-volatile memory of the client computer are then processed for updating item holdings and accounting. This interchange of messages takes about 2 seconds. The timers can be started in response to the generation of the acknowledgement messages 5 and 7 or in response to the receipt of the deal details 4 and 6, as desired.

If the full range of acknowledgements is not received, a time lapse generator which is started when details of the deal are received

at the client's station continues to time out and after 15 seconds will alert that client that the bargain, although stored in his memory, cannot be considered as complete because the other party has not acknowledged in due time. It is then up to that client to contact the other party to check if he has received details of the bargain, in which case the deal can be considered as complete but if the other client has not received details of the bargain, then the deal should be considered cancelled. The client can make his first communication through the host computer and the standard communication channels or a back-up communication system which may be in operation but otherwise can use standard direct communication channels such as telephone, facsimile or telex in an attempt to complete the deal.

The time lapse generator in the client's computer can be used to generate interrogation signals automatically if the confirmation from the other party has not been received within a certain period before alerting the operator that the deal is in doubt but it has been found useful to alert the operator at the earliest possible moment since he is better able to decide the correct course of action in response to the circumstances.

The time lapse generator may be adjustable so that the operator will be alerted at a time which can be adjusted to have a value other than the 15 seconds mentioned above. Similarly, the time lapse generator can be adjusted to send automatic interrogation signals at different times if this provision is required. If the time selected is too high, the system will spend too long waiting for confirmations and its capacity will be reduced. If it is too low, there may be many false alarms. In this case a confirmation received after the time selected may be used to generate a late confirmation message which cancels the operator alerting and interrogation signals.